

Density is a characteristic physical property of any material. The density of a substance or material describes how much a given volume of that material weighs and is calculated as its mass divided by its volume. Materials with differing masses for the same volume have different densities.

The density of felt takes into account the felt itself, without cavities. However, air is also included in felts and other textile fabrics, and for this reason the term bulk density is also used (see also DIN 61206).

This is specified in kilograms per cubic decimetre (kg/dm³).

The SI unit is kg/m³ (1000 kg/m³ = 1 kg/dm³ = 1kg/l).

General conversion formula:

+Density = Mass divided by volume; $\rho = m / V$

ρ (rho) = Density,

m = Mass,

V = Volume.

A commonly used metric unit for density is kg/dm³

The following formula is useful for the calculation of bulk densities, as the decimetre (dm) is not very practical to use.

It is easier to visualise dimensions in millimetres (mm) and metres (m).

$$\text{Spez. Gewicht [kg / dm}^3] = \frac{\text{Masse [kg]}}{\text{Dicke [mm]} * \text{Länge [m]} * \text{Breite [m]}}$$

The following page lists a selection of materials with their bulk densities (no liability accepted for the correctness of this information). This list is not necessarily complete.

Felt, naturally good!

Textiles

Material	Density [kg/dm ³]	Designation
Needle felt	0.08 - 0.36	
Fleece	0.05 - 0.30	
Cotton wool	0.05 - 0.10	
Wool fibre	1.30	
Wool felt	0.08 - 0.68	

Liquids

Material	Density [kg/dm ³]	Designation
Lubricating oil	0.80 - 0.90	
Water	1.00	H2O

Paper and wood

Material	Density [kg/dm ³]	Designation
Laminated fabric	1.40	
Phenolic paper	1.40	Pertinax
Wood	0.50 - 0.90	

Plastics

Material	Dichte [kg/dm ³]	Designation
Acrylonitrile butadiene styrene	1.07	ABS
Polyacetal	1.41	POM
Polyamide	1.14	PA 6
Polycarbonate	1.20	PC
Polyether ether ketone	1.32	IV
Polyetherimides	1.27	PEI
Polyethersulfone	1.37	PES
Polyethylene	0.95	PE
Polyethylene terephthalate	1.37	PET
Poly(methyl methacrylate)	1.18	PMMA
Poly(p-phenylene oxide)	1.10	PPO
Polypropylene	0.91	PP
Polysulfone	1.24	PSU
Polytetrafluorethylene	2.15	PTFE
Polyvinyl chloride	1.36	PVC
Polyvinylidene fluoride	1.78	PVDF
Polystyrene	0.02 - 0.06	

Metals

Material	Density [kg/dm ³]	Designation
41Cr4	7.84	
AlCuMg1	2.80	
AlMg5	2.63	
AlMgSi1	2.70	
Aluminium	2.70	Al
Antimony	6.68	Sb
Beryllium	1.82	Be
Bismuth	9.80	Bi
Lead	11.34	Pb
Bronze	8.73	
Chromium	7.19	Cr
Iron	7.90	Fe
Gold	19.30	Au
Grey cast iron	7.20	
Indium	7.31	In
Cadmium	8.65	Cd
Cobalt	8.90	Co
Copper	8.96	Cu
Lithium	0.53	Li
Magnesium	1.74	Mg
Brass	8.50	
Molybdenum	10.20	Mo
Sodium	0.97	Na
Nickel	8.90	Ni
Niobium	8.57	Nb
Ni-steel (36%)	8.13	
Osmium	22.50	Os
Platinum	21.45	Pt
Mercury	13.55	Hg
Gunmetal	8.70	
Silver	10.49	Ag
Steel C 15	7.85	
Steel C 35	7.84	
Steel C 60	7.83	
Tantalum	16.60	Ta
Titanium	4.54	Ti
Vanadium	6.00	V
Tungsten	19.30	W
X10Cr13	7.75	
X12CrNi188	7.00	
Zinc	7.14	Zn
Tin	7.30	Sn

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